

1 **Section 4-1900 — Limestone Conglomerate Overlay District (LOD)**

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3 **4-1901 — Purpose and Intent.** A large area just east of the Catoctin Mountain  
4 range in the Rural Policy Area of Loudoun County is comprised of  
5 limestone and “Karst terrain” areas. The limestone geology of  
6 carbonate deposits is dissolved over time by mildly acidic  
7 precipitation, creating fissures. The deposits are highly permeable,  
8 allowing surface water to pass through quickly to underlying aquifers  
9 and groundwater, and to reappear elsewhere as springs. The terrain is  
10 also characterized by the presence of certain natural features, such as  
11 sinkholes and rock outcrops. Thus, development on Karst terrain has a  
12 direct correlation to the potential for collapse and ground slippage and  
13 the susceptibility of groundwater and surface water pollution, and  
14 spring contamination, posing serious risks to public health, safety, and  
15 welfare. The provisions of this Section 4-1900 are intended to regulate  
16 land use and development in areas underlain by limestone and in areas  
17 with Karst features and Karst terrain in such a manner so as to:

- 18 (A) — Protect groundwater and surface water resources from  
19 contamination;
- 20 (B) — Reduce potential for property damage resulting from  
21 subsidence or other earth movement; and
- 22 (C) — Protect the health, safety, and welfare of the public.

23 **4-1902 — Authority.** Authority for these provisions includes:

- 24 (A) — Chapter 11, Title 15.2, Code of Virginia (Planning,  
25 Subdivision of Land and Zoning).
- 26 (B) — Soil Conservation Districts Law, Va. Code Sections 21-2(c),  
27 21-2(d).
- 28 (C) — Virginia Environmental Quality Act, Va. Code Section 10-  
29 178.
- 30 (D) — Erosion and Sediment Control Act, Va. Code Section 21-  
31 89.2.

32 **4-1903 — Applicability and Exemptions.**

- 33 (A) — **Applicability — Land Area and Features Included in the**  
34 **LOD.** This Section 4-1900 shall apply to all land area and  
35 karst features included in the Limestone Conglomerate  
36 Overlay District (LOD), as shown on the official Limestone  
37 Conglomerate Overlay District Map of Loudoun County

1 (“LOD Map”), which with all explanatory matter thereon, is  
2 hereby incorporated by reference.

3 (1) — The LOD Map delineates the following features:

4 (a) — The extent of the limestone bedrock  
5 formations;

6 (b) — Sinkholes; and

7 (c) — Rock outcrops.

8 (2) — The LOD Map does not delineate required buffers  
9 around karst features. (See Section 4-1905 below.)

10 (B) — **Applicability — Covered Activities.** This Section shall  
11 apply to all proposed land disturbing activities, including  
12 non-agricultural rural economy uses, new single family  
13 development, and subdivision, that occurs within the LOD.  
14 Expansion, alteration, or reconstruction of legally existing  
15 buildings, structures, and impervious surface areas existing  
16 on January 7, 2003 shall not be covered, provided that such  
17 alteration does not increase the total footprint of a structure  
18 or impervious surface by more than twenty five percent  
19 (25%) or 2,000 square feet, whichever is greater.

20  
21 (C) — **Exemptions.** The following land disturbing activities shall  
22 be allowed within the LOD, subject to the specific limits set  
23 forth below:

24 (1) — **Agricultural Operations.** This section shall not  
25 apply to agricultural operations located in the LOD  
26 that are covered by a Conservation Farm  
27 Management Plan, approved by the Loudoun  
28 County Soil and Water Conservation District or the  
29 U.S. Natural Resources and Conservation Service  
30 that includes best management practices, and a  
31 Nutrient Management Plan (where applicable).  
32 Structures associated with agricultural operations  
33 are not exempt from these provisions.

34 (2) — **Existing Legal Lots within Sensitive Limestone**  
35 **Areas.** Following a Geotechnical or Geophysical  
36 study, a legal lot of record, which lot was: (a) in  
37 existence on January 7, 2003; and (b) contains in  
38 whole or in part a sensitive environmental resource  
39 associated with limestone bedrock area established  
40 by Section 4-1905, below, may be developed for a

1 single-family detached dwelling and permitted  
2 accessory structures. To the maximum extent  
3 feasible, no development shall take place within  
4 karst feature buffers, but where residential  
5 development takes place, such dwelling shall be  
6 sited on the lot as far from any karst feature as  
7 possible, and shall comply with the development  
8 standards in this section to the maximum extent  
9 feasible. Development on such lot shall not be  
10 allowed if subsidence poses a serious risk to public  
11 health or safety or to the safety of residents or users  
12 of the proposed development, as determined by the  
13 County

14 ~~4-1904~~ **Review Procedures.** All development approvals, review procedures,  
15 modifications, and density calculations in the LOD are governed by  
16 Article VI, "Development Process and Administration," as applicable,  
17 and procedures in Chapter 8 of the Facilities Standards Manual (FSM).

18 ~~4-1905~~ **Establishment of Sensitive Limestone Areas.**

19 (A) ~~Sensitive Environmental Resources Associated with~~  
20 ~~Limestone Bedrock.~~ For all development applications  
21 involving properties subject to LOD as identified on the LOD  
22 Map, or by an approved Preliminary Soils Review, the  
23 applicant shall submit a Geotechnical or Geophysical Study  
24 in accordance with standards set forth in the Facilities  
25 Standards Manual, Chapter 6. Such Geotechnical or  
26 Geophysical Study shall identify the following sensitive  
27 environmental resources associated with limestone bedrock:

- 28 (1) Closed depressions;
- 29 (2) Open sinkholes;
- 30 (3) Rock outcrops;
- 31 (4) Seasonal high-water table indicators;
- 32 (5) Surface drainage into ground;
- 33 (6) Faults;
- 34 (7) Other hazardous subsidence conditions;
- 35 (8) Underground solution channels; and

(9) ~~Other underground features that may affect the proposed development.~~

(10) ~~Cave openings~~

~~If conditions warrant mitigation to protect sensitive environmental resources associated with limestone bedrock, then the study shall propose mitigation measures to be undertaken. Avoidance of sensitive environmental resources associated with limestone bedrock and of karst features shall be the preferred mitigation measure.~~

(B) ~~**Karst Feature Buffers.** For each karst feature identified on the LOD Map or by an approved Preliminary Soils Review, or the required Geotechnical/Geophysical Study, a Karst Feature Buffer shall be established from the outermost edge of the feature. The minimum Karst Feature Buffer width shall be:~~

(1) ~~Fifty (50) feet from any rock outcrop;~~

(2) ~~One hundred (100) feet from the rim of any sinkhole; and~~

(3) ~~One hundred (100) feet from any cave opening.~~

#### ~~**4-1906 Permitted Uses and Activities.**~~

(A) ~~**Uses and Activities within Karst Feature Buffers.**~~

(1) ~~Land disturbing activities, development, and impervious surface coverage are prohibited within Karst Feature Buffers, except for the following:~~

(a) ~~Fences that do not obstruct surface water flow;~~

(b) ~~Trails and other passive recreation facilities, excluding buildings, for pedestrian, bike or other non-motorized use, provided that such facility is designed with permeable materials and is located a minimum of 25 feet from the edge of a karst feature; and~~

(c) ~~Restoration and revegetation.~~

(2) ~~Residential structures shall be located outside Karst Feature Buffers, unless there are no feasible~~

development sites available outside the buffers. Residential structures located within a Karst feature shall be sited on the lot as far away from the Karst feature to the maximum extent feasible.

~~(B) — Uses and Activities in the Limestone Conglomerate Overlay District, Outside Karst Feature Buffers.~~ All uses and structures permitted by right in the underlying zoning district are permitted within the Limestone Conglomerate Overlay District outside of Karst Feature Buffers, subject to the standards and mitigation measures in this Section and Zoning Ordinance.

~~4-1907 — Special Exception Uses.~~ All uses and structures permitted by special exception in the underlying zoning district may be permitted subject to the procedures and criteria stated in Section 6-1300, “Special Exception,” of the Zoning Ordinance, to conditions identified in a grading permit application, when required, and to any mitigation measures required according to Section 4-1909, below

~~4-1908 — Development Standards for the LOD.~~ Unless otherwise exempt by Section 4-1903(C) above, all land disturbing activities permitted by right or special exception in the LOD shall adhere to the following development standards:

~~(A) — Structures in Potential Subsidence Areas.~~ No structure shall be built in an area where a Geotechnical or Geophysical Study indicates that potential subsidence may occur that would cause physical injury or harm to the public or future residents unless such a study indicates that such potential harm can be mitigated.

~~(B) — Site Grading.~~ To the maximum extent feasible, site grading shall maintain natural drainages. If not feasible, then drainage shall be designed to avoid damage to sensitive environmental resources associated with limestone bedrock as identified in the required Geotechnical or Geophysical study.

~~(C) — Surface Water Run-Off.~~

~~(1) — Non point source pollution load of nutrients and sediment shall not exceed the standards specified in Chapter 5 of the Facilities Standards Manual.~~

~~(2) — Surface water run-off shall not be redirected to enter a sinkhole or closed depression. Drainage plans shall be designed to route surface water run-~~

1 off through vegetative filters or other filtration  
2 measures before it enters such features, and to  
3 protect neighboring properties from runoff on the  
4 subject property.

5 (D) ~~**Revegetation.**~~ Disturbed areas not covered by paving, stone,  
6 or other solid materials shall be revegetated with native plant  
7 species that are compatible with the natural vegetation and  
8 tree cover and that have low water and nutrient requirements.

9 (E) ~~**Application of Wastewater Sludge.**~~ Application of  
10 wastewater sludge shall be subject to the requirements of a  
11 nutrient management plan acceptable to the County pursuant  
12 to provisions contained in the Loudoun County Codified  
13 Ordinances

14 (F) ~~**Communal Water and Wells.**~~ Wells shall be installed in  
15 accordance with the provisions in Chapter 6 (proposed) of the  
16 Facilities Standards Manual, relating to "Subdivisions with  
17 Communal Water Systems," and "Subdivisions with  
18 Individual Wells." In addition to well protection standards in  
19 the FSM, structures and septic systems shall be located a  
20 minimum distance of 100 feet from all existing and proposed  
21 wells, both on and off site.

22 (G) ~~**On-Site Sewage Disposal Systems.**~~ On site sewage disposal  
23 systems, as currently defined in the Land Subdivision  
24 Development Ordinance, are allowed for individual lots and  
25 subdivisions with fewer than eight (8) lots in the LOD.  
26 Sewage disposal systems shall be subject to the review  
27 processes and requirements in the existing LSDO (Section  
28 1245.10) and shall comply with requirements of the State of  
29 Virginia Department of Health Division of Sewage and  
30 Water Services, the Loudoun County Sanitation Authority  
31 regulations, the Loudoun County Health Department, and the  
32 following:

33 (1) Within the LOD, in areas that the Director of the  
34 Loudoun County Health Department deems  
35 appropriate for sewage disposal systems, the  
36 applicant shall only use a sewage disposal system  
37 that is at least 90% effective in removing nitrogens.

38 (2) For existing and new systems, owners shall submit  
39 evidence of pumping, inspection, and any necessary  
40 repairs and maintenance every three years. The  
41 applicant shall submit evidence of current

inspection and maintenance before expansion or conversion of a land use.

(H) ~~Communal Wastewater Systems.~~ Proposed subdivisions containing eight (8) or more lots shall be served by communal wastewater systems, unless the applicant demonstrates to the County that other types of systems are available that will achieve the same or superior treatment results. The County shall allow communal wastewater systems in the LOD subject to the following standards:

(1) ~~Where sufficient buildable land area exists on the portion of a property outside the LOD to accommodate a proposed communal wastewater disposal system, that area shall be used before any land within the LOD shall be used; or~~

(2) ~~Where insufficient buildable land area exists outside of the LOD, as much of the proposed communal wastewater disposal system shall be sited outside the LOD as possible.~~

(3) ~~Where any portion of a proposed communal wastewater disposal system is to be located within the LOD the applicant shall demonstrate through a Geophysical Study acceptable to the County that the communal wastewater disposal system will minimize run-off generated, enhance filtration, and will not have an adverse environmental impact on underlying aquifers and groundwater. In addition, the applicant shall provide a plan for regular operation and maintenance.~~

(I) ~~Protection of Springs.~~ Land disturbing activities, development, and impervious surface coverage are prohibited within one hundred (100) feet from a spring, measured from the vertical source of a spring on flat terrain or from the first emergence of a spring on any steep slope (15% or greater).

(J) ~~Stormwater Management Ponds.~~

(1) ~~To the maximum extent feasible, stormwater management ponds shall not be located within areas containing open sinkholes and closed depressions.~~

(2) ~~Stormwater management ponds constructed within the LOD shall be lined with impervious materials to~~

1 prevent groundwater pollution, in accordance with  
2 Chapter 5 of the Facilities Standards Manual.

3 ~~(K) — **Warnings to Property Owners.** A note shall be placed on~~  
4 ~~any record subdivision plat for land in the LOD, containing~~  
5 ~~the following, or similar, language: “Household lawn~~  
6 ~~fertilizers, herbicides, and pesticides for residential purposes~~  
7 ~~should be limited due to the underlying geology of this~~  
8 ~~property, and the potential for groundwater contamination.~~  
9 ~~Application of fertilizers and lime is allowed within the~~  
10 ~~Limestone Conglomerate Overlay District but should only be~~  
11 ~~applied based on results of a soil test obtained through the~~  
12 ~~Virginia Tech extension service or other County approved~~  
13 ~~laboratory.~~

14 ~~**4-1909 — Mitigation Measures for the LOD.** In addition to compliance with~~  
15 ~~the development standards in Section 4-1908, land disturbing activities~~  
16 ~~shall employ one or more measures as necessary to mitigate any~~  
17 ~~potential adverse impacts to the County’s subsurface water resources~~  
18 ~~or sensitive environmental resources associated with limestone~~  
19 ~~bedrock, as identified in a preliminary soils review, required~~  
20 ~~Geotechnical or Geophysical Study as set forth in Section 4-1905(A),~~  
21 ~~or other hydrogeologic or environmental analysis,~~

22 ~~(A) — **General.** Mitigation measures shall be directly related to the~~  
23 ~~proposed land disturbing activity and its potential adverse~~  
24 ~~impact on karst features or sensitive environmental resources~~  
25 ~~associated with limestone bedrock identified on the subject~~  
26 ~~property.~~

27 ~~(B) — **Mitigation Measures.** If warranted by a study required by~~  
28 ~~this Zoning Ordinance, the County shall require measures to~~  
29 ~~mitigate the identified potential adverse impacts, including~~  
30 ~~but not limited to the following:~~

31 ~~(1) — **Ineligibility for Density Increases.** The applicant~~  
32 ~~may not be eligible for any density increases~~  
33 ~~permitted under the clustering provisions of this~~  
34 ~~Ordinance.~~

35 ~~(2) — **Use of a Cluster Subdivision.** Where not~~  
36 ~~otherwise required by this Ordinance, the County~~  
37 ~~may require cluster development.~~

38 ~~(3) — **Landscaping and Reductions in Impervious**~~  
39 ~~**Surface Coverage.** The County may require:~~



- (a) ~~Reductions in the maximum impervious surface coverage allowed;~~
- (b) ~~Reductions in the area devoted to landscaped lawns, and~~
- (c) ~~the use of xeriscape (i.e., use of native plant materials and landscape materials that have lower water and nutrient requirements).~~
- (4) ~~**Prohibition of Specific Pollution Sources.** The County may prohibit specific pollution sources, as defined in Chapter 5 of the Facilities Standards Manual if the applicant does not propose effective mitigation measures acceptable to the County, provide evidence that pollution sources will be properly monitored, and that they will adhere to facility design standards.~~
- (a) ~~The County may prohibit the following pollution sources, including, but not limited to:~~
- (i) ~~Uses and activities involving hazardous substances;~~
- (ii) ~~Uses and activities involving the application of high-nitrate herbicides or pesticides;~~
- (iii) ~~Automobile service stations;~~
- (iv) ~~Underground storage tanks;~~
- (v) ~~Landfills and waste sites; and~~
- (vi) ~~Other uses and activities with high risk of releasing pollutants.~~
- (5) ~~**Storage Tanks.** The County may require leak testing and secondary containment of storage tanks.~~
- (6) ~~**Conservation of Indigenous Vegetation.** The County may require retention of indigenous vegetation to the maximum extent feasible, and in accordance with Tree Conservation Standards in Chapter 7 of the Facilities Standards Manual.~~
- (7) ~~**Groundwater Monitoring.** The County may require the applicant to establish a regular system of groundwater monitoring by a qualified professional for the proposed development.~~

